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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,203	07/18/2006	Thomas Daniel	29827/42183	4892

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EXAMINER	
NGUYEN, VU ANH	

ART UNIT	PAPER NUMBER
1796	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,203	DANIEL ET AL.	
	Examiner	Art Unit	
	Vu Nguyen	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of applicant's amendment filed 01/07/2009, wherein claims 1, 3, 6 and 10 have been amended and new claim 15 has been added. Claims 1-15 are pending in this application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 6, 9-12, and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimomura et al. (U.S. 5,210,298).

4. Corresponding to the limitations set forth in these claims, Shimomura et al. (Shimomura, hereafter) teaches a process for preparing a polymer comprising an acrylate salt and acrylic acid. The monomer solution is prepared by mixing additional acrylic acid to an aqueous solution containing acrylic acid that has been neutralized to an extent of greater than 100 mol% by a base while the temperature is maintained at 20-40^{o}C (Example 1. Also note that the temperature is 30 ^{o}C in Example 2). The concentration of the acrylate salt in the aqueous solution (before addition of more acrylic acid) is calculated to be about 25 wt% (Example 1), and slightly more than 30 wt%

(Examples 4 and Control 1). The amounts of the acrylate salt and acrylic acid are disclosed in an example to be 73 mol% and 26.4 mol%, respectively (Example 1). The prepared monomer solution is fed to a kneader along with a cross-linker (such as trimethylol propane triacrylate) and an initiator, and polymerized (Example 5). The amount of said cross-linker relative to the acrylate salt is 0.05 mol% (Example 5). The base used to neutralize the acrylic acid comprises aqueous sodium hydroxide solution (Example 1).

5. The disclosed monomer solution is inherently supersaturated and reads on claim 15 due to the following observations. As explained by the applicants in a preferred embodiment in the specification (pages 3-4), a supersaturated aqueous solution of sodium acrylate/acrylic acid is prepared by (1) preparing an aqueous solution of 100% neutralized sodium acrylate wherein the concentration of the acrylate salt is 30-40 wt%, (3) adding more sodium hydroxide solution (preferably a 50 wt% aqueous sodium solution) to obtain over-neutralization, and (3) adding excess acrylic acid to have a monomer solution where the final extent of neutralization is 65-78%. In the method of the prior art, the monomer solution is prepared by (1) preparing an aqueous solution of 90-95% neutralized acrylate salt/acrylic acid wherein the concentration of the acrylate salt/acrylic acid is greater than 30 wt%, (2) adding more base (such as sodium hydroxide) solution to obtain a neutralization of 102%, wherein the base solution includes 48 wt% sodium hydroxide solution (Ex. 1-2 & Control 1) or 50 wt% potassium hydroxide solution (Ex. 3), and (3) adding excess acrylic acid so that the final neutralization is 75% (Ex. 1, Control 1). Clearly, after the addition of more base solution

to obtain a 102% neutralization and after addition of excess acrylic acid (final concentration of 35%, 37%, and 40% in the examples), the monomer solution is in supersaturation state.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 5, 7-8, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimomura et al. (U.S. 5,210,298) in view of Cooke (GB-1073856).

9. Claim 5 specifies the (meth)acrylic acid recited in claim 2 to comprise not more than 2000 ppm of dimers and less than 150 ppm of a stabilizer (inhibitor). Claims 7 and 8 modify the process of claim 1 so that the supersaturated (meth)acrylate salt solution is prepared by dissolving a solid (meth)acrylate salt (anhydrous or containing 0.1-10 wt% of water) in water. The independent claim 13 recites a method of preparing a polymer

comprising dissolving a solid salt of a (meth)acrylate in water to form a supersaturated monomer solution and polymerizing the monomer in the presence of an optional second monomer.

10. Corresponding to the limitations set forth in these claims, Shimomura teaches a similar process as discussed above. However, the prior art is silent as to a content of dimers and inhibitor in the acrylic acid, and the prior art fails to teach the use of a solid acrylate salt in the disclosed process.

11. Cooke teaches a process for producing high-purity solid sodium acrylate. The process comprises mixing a methanol solution of sodium hydroxide with a methanol solution of acrylic acid to form a precipitate which is then dried to obtain sodium acrylate (p. 1, lines 31-38). The process enables obtainment of anhydrous sodium acrylate which is relatively free of polymerization products (p. 1, lines 27-30). The disclosed examples show solid sodium acrylate samples containing very little or no water and a content of polymerization products of about 2000 ppm (p. 2, Table). Cooke also teaches that highly pure anhydrous solid sodium acrylate can be obtained by using a low mixing temperature (p. 1, lines 44-49).

12. In light of the teachings by Cooke, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have used a lower temperature in the synthesis of sodium acrylate (including drying temperature) to obtain anhydrous sodium acrylate containing little or no polymerization products and employed it in the process taught by Shimomura so that the polymerization reaction is not inhibited by stabilizer and undesired effects caused by dimers can be avoided.

Response to Arguments

13. Applicant's arguments filed 01/07/2009 have been fully considered but they are not persuasive. Applicant alleges that the monomer solution disclosed in Shimomura (above) is not supersaturated. The examiner has provided rationales to show that the disclosed monomer solution is inherently supersaturated. These rationales are further elaborated for greater clarity in paragraph 5 above. As to the applicant's arguments relating to temperature and addition of excess acrylic acid (Remarks, p. 7, paragraphs 2 and 4), the over-neutralization step in the prior art is not maintained at 40°C but the over-neutralized solution is inherently cooled further in the ageing step as indicated by the measurement of the pH of the solution at 25°C (Ex. 1, 2, 4), and 15°C (Ex. 3). Also, in the process of the prior art, excess acrylic acid is added in similarity with the claimed process as discussed above.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Nguyen whose telephone number is (571)270-5454. The examiner can normally be reached on M-F 7:30-5:00 (Alternating Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vu Nguyen
Examiner
Art Unit 1796

/David Wu/
Supervisory Patent Examiner, Art Unit 1796